and "outputting a classifier" were unclear since the claims do not set forth any steps involved in the method/process and it is unclear what method/process the applicant is intending to encompass. In response the applicant has modified "training a classifier" to read " training a classifier to provide aesthetic scores based on the training set". The applicant has also modified "outputting a classifier" to read "outputting the classifier trained to provide aesthetic scores" to clarify any vagueness that existed in these claims. The subject matter provided in these amendments is fully supported by the specification.

Regarding Claims 13 and 25, the Examiner contended that the phrase "generating and outputting a recommendation" as unclear since the claims do not set forth any steps involved in the method/process and it is unclear what method/process the applicant is intending to encompass. But the applicant believes that these claims do set forth positive steps for carrying out the invention. As to both Claim 13 and 25, "outputting the recommendation" is clearly a positive step, and the clause above "generating a recommendation to improve the aesthetic score for the image" clearly defines what this recommendation encompasses. And, per the MPEP, Examiner's Note to paragraph 7.34.01, "If the scope of the claimed subject matter can be determined by one having ordinary skill in the art, a rejection using this form paragraph would not be appropriate." The applicant believes that someone skilled in the art would clearly be able to determine the method/process the applicant is intending to encompass. Hence, the applicant believes that Claims 13 and 25 are not indefinite.

It is believed the claims now fulfill the requirements of 35 USC 112, second paragraph, as they particularly point out and distinctly claim the subject matter which the applicant regards as the invention. Therefore, it is respectfully requested that the rejection of Claims 1-8, 13-21 and 25-29 be reconsidered based on the amended claim language and the arguments presented above.

The 35 USC 102 Rejection of 1, 2, 6-12 and 19-24.

Claims 1, 2, 6-12 and 19-24 were rejected under 35 USC 102(e) as being anticipated by Burges, U.S. Patent No. 6,112,195. It was contended in the above-identified Office Action that Burges teaches all of the elements of the rejected claims. The applicant respectfully disagrees

with this contention of anticipation.

The applicant claims a system and method for the computerized aesthetic judgment of images. In one embodiment, a computer-implemented method inputs a training set of images, where each image has a corresponding set of one or more aesthetic scores. The method trains a classifier based on the training set, and outputs the classifier. An image can then be input into the classifier, such that an aesthetic score for the image is generated by the classifier and output. Furthermore, recommendations can be generated to improve the aesthetic score for the image, which are also output.

Thus, a number of sample images are surveyed by professional designers and graphic artists, among other professionals, where each image receives an aesthetic score from each professional, to make up the training set. This training set is then input into a classifier, such as a Bayesian classifier or a Support Vector Machine (SVM), which correlates the scores for the images based on features of the images, such as the presence and distribution of colors, etc. The resulting trained classifier can then be used by end users, to provide aesthetic scores for their own images. Recommendations to improve the aesthetic scores of the images, and thus the aesthetics of the images, can also be generated, based on the same features selected by the classifier, utilizing a gradient ascent or localized search approach, for example.

In this manner, embodiments of the invention provide for advantages not found within the prior art. Integrating an embodiment of the invention into graphics programs, or integrating an embodiment into a stand-alone program, allows end users to have access to professional judgment as to how "good" their created images "look." The end users can make changes as necessary based on the resulting aesthetic scores of their images, to improve the images' scores, or rely on the recommendations made by an embodiment of the invention to improve the images' scores.

In contrast, Burges merely discloses a kernel-based method which operates on an input data in such a way as to provide invariance under some symmetry transformation. In an embodiment of the invention, a pattern recognizer includes a preprocessor and a support vector machine (SVM). The later is trained to recognize a particular set of images. The

preprocessor operates on an input image in such a way as to provide local translation invariance. In particular, the preprocessor maps a particular input image, and its translate, to two points in the decision plane of the SVM, whose difference is independent of the original data. As a result, the recognizer has built-in local invariance and does not require training the SVM to translated versions of the images. The size of the preprocessed image is less than the size of the original image and hence the SVM operates on less data. **Burges does not teach a training classifier that is trained to classify the aesthetic scores of images.**

The Examiner alleges that Burges teaches "a computer-implemented method comprising: A. inputting a training set including a plurality of images and a corresponding plurality of aesthetic scores for the images (see figure 2; and column 1, lines 19-25 and lines 53-63; inputting images for training and classification); and B. training a classifier based on the training set and outputting the classifier (see column 1, lines 19-35: training a classifier)." Column 1, lines 19-25 of Burges merely state, "In pattern recognition, it is known in the art to use a recognizer having a support-vector-machine (SVM) architecture. The SVM is viewed as mapping an input image on a decision plane. The output of the SVM is typically a numerical result, the value of which is associated with whether, or not, the input image has been recognized as a particular type of image". **Nowhere in this passage, nor in FIG. 2 or column 1, lines 53-63, are aesthetic scores mentioned. Nothing in Burges even mentions in passing the aesthetic scores of images, must less teaches training a classifier using such aesthetic scores.**

Additionally, as to Claim 2, the Examiner alleges that Burges teaches "A. inputting an image into the classifier (see figure 2; and column 1, lines 19-35: inputting images) B. generating an aesthetic score for the image based on the classifier outputting the aesthetic score for the image (see column 1, lines 22-25: generating scores relative to image attributes.) Applicant respectfully disagrees with this contention. **This passage of Burges and figure 2 say nothing about aesthetic scores for images**.

As for Claim 6, which is dependent from Claim 1, the Examiner also states that Burges teaches "of a method wherein training a classifier comprises training one of a Bayesian classifier, Support Vector Machine (SVM) classifier, a neural net classifier, and a decision tree classifier (see column 1, lines 19-25: using SVM classifier)." The applicant again

respectfully disagrees. **No teaching of the aesth tic scores of imag s, much less teaching training a classifier using such aesth tic scores is even mentioned, much less taught, in Burg s.**

Furthermore, as for Claim 7, which is also dependent from Claim 1, the Examiner states that Burges teaches a method wherein utilizing feature selection to correlate at least one image feature of the images with their corresponding aesthetic scores (see column 1, lines 25-35: using image features to distinguish an object. This passage, which is in the background section of Burges, states " As a very general example, consider a 16 pixel by 16 pixel image of a tree. In this context, a SVM recognition system is first 'trained' with a set of known images of a tree. For example, the SVM system could be trained on 1000 different tree images, each image represented by 256 pixels. " **This passage does not teach using feature vector selection to correlate at least one image of the images with their corresponding aesthetic score.** This passage merely seems to indicate that the SVM of Burges is trained to recognize a tree.

As for Claim 8, the Examiner contends that Burges teaches "a method wherein utilizing feature selection to correlate at least one image feature selected from the group essentially consisting of: color presence, color distribution, geometrical quantities of segmented image parts, coefficients of image transformations and higher-level image representations (see column 1, lines 25-35). Again, the applicant disagrees that this passage teaches any such thing. As discussed above, this passage may merely be presumed to teach a SVM recognizing a tree in an image. **There is no teaching in this passage of utilizing feature selection to correlate at least one image feature selected from the group essentially consisting of: color presence, color distribution, geometrical quantities of segmented image parts, coefficients of image transformations and higher-level image representations.**

The Examiner also contends that, as per Claim 9, Burges teaches "a computer-implemented method comprising: A. inputting an image (see figure 2; and column 1, lines 19-26 and lines 53-63: inputting images); and B. generating an aesthetic score for the image by utilizing a classifier previously trained on a training set including a plurality of images and a corresponding plurality of aesthetic scores for the images and outputting the image (see

column 1, lines 19-35: training a classifier)." The applicant also disagrees with this contention. **Ther simply is no teaching in Burges of aesthetic scor s for images being used in any manner.**

Likewise, the Examiner contends that Burges teaches a method wherein generating an aesthetic score comprises generating an aesthetic score based on at least one image feature of the image (see column 1, lines 25-35). The applicant again disagrees. **There simply is no teaching in Burges of aesthetic scores for images being used in any manner.**

As per Claim 11, the Examiner also states that Burges teaches a method of generating an aesthetic score based on at least one image feature selected from the group essentially consisting of: color presence, color distribution, geometrical quantities of segmented image parts, coefficients of image transformations and higher-level image representations. **Again, it is the applicant's position that there is simply no teaching in Burges of aesthetic scores for images being used.**

As for Claim 12, the Examiner claims that Burges teaches "a method wherein utilizing comprises utilizing one of a Bayesian classifier, a Support Vector Machine (SVM) classifier, a neural net classifier, and a decision tree classifier (see column 1, lines 19-25)." **No teaching of the aesthetic scores of images, much less teaching training a classifier using such aesthetic scores is even mentioned, much less taught, in Burges**.

As for Claim 19, the Examiner states that the same limitations are subjected to in Claim 1, therefore the same rejections apply. Therefore, the applicant responds like in Claim 1-- **Burges does not teach a training classifier that is trained to classify the aesthetic scores of images. No where does he even mention the word aesthetic.**

As for Claims 20-21, the Examiner states that the same limitations are subjected to in Claim 1, therefore the same rejections apply. Therefore, the applicant responds as in Claims 6 and 7-- **No teaching of the aesthetic scores of images, much less teaching training a classifier using such aesthetic scores is even mentioned, much less taught, in Burges. This passage does not teach using featur vector selection to correlate at least one**

image of the images with their corresponding aesthetic score. This passage merely seems to indicate that the SVM of Burges is trained to recognize a tree.

As for Claims 22-23, the Examiner states that the same limitations are subjected to in Claim 9-10, therefore the same rejections apply. Therefore, the applicant responds as in Claims 9 and 10-- **There simply is no teaching in Burges of aesthetic scores for images being used in any manner.**

As for Claim 24, the Examiner states that the same limitations are subjected to in Claim 12-16, therefore the same rejections apply. Therefore, the applicant responds as in Claims 12-16-- **No teaching of the aesthetic scores of images, much less teaching training a classifier using such aesthetic scores is even mentioned, much less taught, in Burges**.

A prima facie case of anticipation is established only when the Examiner shows, inter alia, that the cited reference teaches each of the claimed elements of a rejected claim. In this case, the Burges reference does not teach the advantageous features of the applicant's claimed invention such as inputting a training set including a plurality of images and a corresponding plurality of aesthetic scores for the images, training the classifier based on the training set and outputting the classifier. Thus, the rejected claims, recite advantageous features that are not taught in the cited art, and as such a prima facie case of anticipation is not established. It is, therefore, respectfully requested that the rejection of Claims 1, 2, 6-12 and 19-24 be reconsidered based on the novel claim language:

" A computer-implemented method comprising:

inputting a training set including a plurality of images and a corresponding plurality of aesthetic scores for the images;

training a classifier to provide aesthetic scores based on the training set; and,

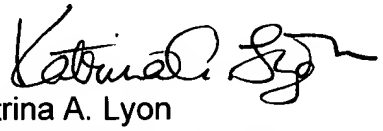
outputting the classifier trained to provide aesthetic scores."

Claims 3-5, 13-18, 25-29 were rejected but would be objected to as being dependent upon a rejected base claim if the 35 USC 112 second paragraph issues are resolved. The Examiner stated that they would then be allowable if rewritten in independent

form including all of the limitations of the base claim and any intervening claims. The applicant has corrected the 112 second paragraph issues with these claims. At this time, however, the applicant respectfully declines to rewrite these claims because it is the applicant's position that the independent claims from which Claims 3-5, 13-18, 25-29 depend are patentable.

In summary, it is believed that the foregoing amendment and arguments have placed the specification and claims in condition for allowance. Reconsideration of the rejection of Claims 1-29 is respectfully requested. Allowance of these claims at an early date is courteously solicited.

Respectfully submitted,



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Version With Markings to Show Changes Made

IN THE CLAIMS

1. A computer-implemented method comprising:

inputting a training set including a plurality of images and a corresponding plurality of aesthetic scores for the images;

training a classifier to provide aesthetic scores based on the training set; and,

outputting the classifier trained to provide aesthetic scores.

19. A machine-readable medium having instructions stored thereon for execution by a processor to perform a method comprising:

inputting a training set including a plurality of images and a corresponding plurality of aesthetic scores for the images;

training a classifier to provide aesthetic scores based on the training set; and,

outputting the classifier trained to provide aesthetic scores.